

XVII. *On the Habits and Structure of the Great Bustard (Otis tarda of Linnæus).*

By WILLIAM YARRELL, Esq., V.P. and Treas. Linn. Soc. &c.

Read January 18, 1853.

SOME kind friends having supplied me with various particulars relating to the habits of the Great Bustard (*Otis tarda* of Linnæus), most of which, as far as I am aware, have not been made public, I have endeavoured to put these materials together, in the belief that they might be found sufficiently interesting to be communicated at a meeting of the Linnean Society; the great scarcity, or rather, the now rare occurrence of the bird in this country, affording but few opportunities for observation.

The first communication came from C. A. Nicholson, Esq., of Balrath Kells, in the county of Meath, and was as follows:—

“You will perhaps be interested by the following few remarks on the habits of the Great Bustard, as observed by me in the neighbourhood of Seville, where they exist in large numbers.

“The males begin to arrive in the cultivated part of the country at the beginning of February; they come in flocks, varying from seven to fifty-three, the smallest and largest numbers I have seen together at that season of the year. The old birds always go together; those of a year old, which are much smaller, never mix with them. The young birds have neither beard nor pouch.

“The females do not arrive till the beginning of April, and come singly, or at most in pairs: as soon as they arrive the flocks of males begin to break up, and after about three weeks you seldom meet more than three or four old males together, they being very frequently to be met with singly. At this time, on a fine day, they spread their tails like Turkey cocks, drooping their wings and expanding their pouches. Being perfectly white under the tail, they can be seen at a great distance while in this attitude; I have however never seen a female near a cock, as apparently they live quite separate. During the month of May the cocks entirely disappear from the cultivated lands, leaving the hens behind them; they, I have every reason to believe, go down to the extensive grass marshes which stretch along the banks of the Guadalquivir. The young bustards are hatched in the large corn plains about Seville, and are able to take care of themselves when the corn is cut in July. At the end of that month, when all the corn is cut and no cover remains, the young birds and hens follow the cocks to the *marisma*, as they call these great marshes in Spain.

“The birds are very difficult to shoot, and many a long day I have spent without any success in hunting them about. The only chance is, to hide in a ravine or ditch, and send men who know the country round the birds to try and drive them over you. They sometimes succeed in this, but not very often. The heaviest bird I shot weighed 28 lbs.;

this was before the hens came, which may perhaps account for this bird being two pounds heavier than any I shot afterwards. The largest bird, from tip to tip of wing, measured 7 feet 3 inches; this bird weighed 26 lbs. The 28 lbs. bird measured but 7 feet 1 inch.

"The birds of a year old weigh from 8 to 10 lbs., and are much the best to eat. I did not shoot a hen.

"All the birds I shot had their stomachs perfectly crammed with barley, both stalks and ears, the leaves of a large-leaved green weed, and a kind of black beetle. The pouch is surrounded by a layer of fat fully an inch thick. I may add that the bustards when flushed generally fly two miles or more, sometimes at least a hundred yards high. They never try to run; one that I had winged making the most awkward attempt possible to get away from me, and though a young bird, showing much more disposition to fight than to get away by running. They fly with a regular flap of the wings, and much faster than they appear to go. I cannot imagine greyhounds being able to catch bustards, though there seems to be good authority for believing they did. There were a great many Little Bustards about also, but I never followed them, as I liked the large ones better."

To my friend John Wolley, Jun., a good ornithologist, who had been in Spain and North Africa, I wrote in reference to the Great Bustard, and was immediately favoured with the following answer:—

"My very little acquaintance with North Africa does not extend beyond the neighbourhood of Tangier, and there I did not see the Great Bustard, nor have I received its eggs from that quarter in the several packets which have been forwarded to me; but this proves nothing; it only renders it probable that this bird is not common in the immediate vicinity of that town.

"Of Spain I have almost equally little to say. One day, about the month of September, going up the Guadalquivir in a steam-boat to Seville, I saw several flocks of the Great Bustard at no great distance from the river banks, on the level, and at that time of the year burnt up, plains which extend, almost without trees or enclosure, on each side of the Guadalquivir. These flocks consisted, as I remember, of four or five birds each; and from the deck of the vessel, which was almost on a level with the land, they appeared to be walking in file, some with their heads down, and reminding one of Gilbert White's note, 'Bustards upon the downs look like deer in the distance.' This appearance of walking in a row was probably deceptive. There was nothing in their manner to give the impression that they were timid, or very cautious, but one at least of a party frequently had its head raised as the steamer passed at a few hundred yards' distance, and with the help of my glass I thought this was generally a cock bird. On one occasion, as the boat came suddenly round a corner, several of them rose together from the edge of the water, springing hastily to the height of forty or fifty feet, nearly perpendicularly, partly perhaps to clear the bank, and then turning suddenly and somewhat clumsily, and after a few more not rapid strokes, sailing along with the arched form of wing so general in game birds.

"I have now told you all I know about the Great Bustard in Spain. I wish I had more to say about it. I was told that the Spanish name was *Abutarda*, which is, I should imagine, connected in some way with the specific name '*tarda*,' for the bird can hardly be called 'slow,' but I do not know who gave it its scientific appellation. On the occasion I

have referred to, a Spaniard on board the steamer told me that two or three months earlier in the year was the time for shooting the bird, and that then they were not difficult to approach with the assistance of cattle or carts, if I remember right. This would of course be in the breeding season."

My next communication was received from John Britton, Esq., so favourably known for the great extent of his interesting labours. It is copied from a letter in his possession, with permission to use it, and refers to Salisbury Plain:—

"A man, about 4 o'clock of a fine morning in June 1801, was coming on horseback from Tinhead to Tilshcad. While at, or near, an enclosure called Asking's Penning, one mile from the village of Tilshcad, he saw over his head, about sixty yards high as near as he could estimate, a large bird, which afterwards proved to be a Bustard. The bird alighted on the ground immediately before the horse, which it indicated a disposition to attack, and in fact very soon began the onset. The man alighted, and getting hold of the bird endeavoured to secure it; and after struggling with it nearly an hour he succeeded, and brought it to Mr. J. Bartley of Tilshcad, to whose house he was going. Not knowing the value of such a bird, he offered it to Mr. Bartley as a present; but Mr. Bartley declined to accept it as such, though he much wished to have it, and after repeated solicitations prevailed on the man to receive for it a small sum, with which he was perfectly satisfied. During the first week that Mr. Bartley had this bird in his possession it was not known to eat anything; however, at length it became very tame, and would at last receive its food from its patron's hands, but still continued shy in the presence of strangers. Its principal food was birds, chiefly sparrows, which it swallowed whole in the feathers with a great deal of avidity. The flowers of charlock and the leaves of rape formed also other parts of its food. Mice it would likewise eat, and in short almost any other animal substance. The food on passing into the stomach was observed to go round the back part of the neck.

"Mr. Bartley is of opinion that the idea of the Bustard's drinking is erroneous; in support of which he says, that during the time this Bustard was in his possession, which was from June till the August following, it had not a drop of water given it, after two or three weeks at first. This fact he considers as a proof that the generally received opinion of a Bustard's drinking is untrue.

"This bird was judged to weigh upwards of 20 lbs., and to measure between the extremities of its wings when extended about 5 feet, and its height was about $3\frac{1}{2}$ feet. Its plumage was beautiful; and from its gait, which was extremely majestic, a spectator would be led to infer that it was sensible of its own superiority over others of the feathered tribe.

"In August Mr. Bartley sold this noble bird to Lord Temple for the sum of thirty guineas.

"The Bustard inhabits the extensive downs of Salisbury Plain; but its race is now almost extirpated. It is thought that not more than three or four are now remaining. Some time in the last summer (viz. 1801), while Mr. Bartley had this bird in his possession, a nest, supposed to belong to this bird, or at least to his mate, for Mr. Bartley's bird was judged to be a male, was found in a wheat-field on Market Lavington Down.

It contained two eggs; they sometimes lay three, though very seldom; they are about the size of those of a goose, of a pale olive-brown, with small spots of a darker hue. The nest was made upon the ground, by scratching a hole in the earth, and lined with a little grass. The eggs were rotten, and had probably undergone a period of incubation.

"An instance of a Bustard attacking a human being, or even a brute animal, of any considerable size, was, I believe, never before heard of; and that two instances of this kind should occur so nearly together may be considered very remarkable. About a fortnight subsequent to the taking of this bird, Mr. Grant, a respectable farmer of Tilshead, was returning from Warminster Market, and near Tilshead Lodge, which is something more than half a mile from the village, was attacked in a similar manner, by, as it is thought, the mate of the same bird. Mr. Grant's horse being rather high-mettled, took fright, became unmanageable and ran off, and consequently Mr. Grant was compelled to abandon his design of endeavouring to capture the bird."

From J. H. Gurney, Esq., of Norwich, I received a communication to the following effect:—

"As far as I can learn, the last Bustard killed in Norfolk was a female, which was shot at Lexham near Swaffham, towards the end of the year 1838. The small flock, of which this bird was one, had for some years previously consisted of females only, the eggs of which were frequently picked up, having been dropped about at random in consequence of the absence of male birds, the latter having become extinct at an earlier date.

"Before horse-hoeing was practised, the large wheat-fields of West Norfolk were often left unhod, and the Bustards were able to nest in them undisturbed; but horse-hoeing rapidly improved the farming and destroyed the nesting of the Bustard."

My worthy friend Frederiek J. Nash, Esq., of Bishops-Stortford, has several times told me, that when he was a young man, and then taking the field as a sportsman, he once saw nine flights of Bustards in one day, not far from Thetford in Norfolk. Some of these birds were probably seen more than once, but at that time, about the beginning of the present century, the country between Thetford and Brandon, and from thence southward to Mildenhall, was considered to be the head-quarters of the Great Bustard in the counties of Norfolk and Suffolk.

Gilbert White of Selborne, in his Diary, mentions, under the date of 17th November, 1782, "That being at a lone farmhouse on the downs between Whorwell and Winchester, the earter told him that about twelve years before he had seen a flock of eighteen Bustards at one time on that farm."

Since the publication of the second edition of the 'History of British Birds,' I have only noticed three instances of the occurrence of this species. One, believed by its size to be a female, was seen on Salisbury Plain by Mr. G. R. Waterhouse of the British Museum, in the month of August 1849, when returning to Salisbury with a party of friends from a visit to Stonehenge. Mr. Waterhouse is well known as an excellent naturalist, and the bird was seen several times on the wing by the party during an interval of eight or ten minutes. The subject is recorded in the volume of the 'Zoologist' for 1849, at page 2590.

The second bird, also a female, was shot in January 1850, at Lydd, in Romney Marsh.

This specimen is in the possession of Dr. Plomley, who recorded the circumstance in the 'Zoologist' for the year 1850, at page 2700.

The third was shot on the 31st December, 1851, in Devonshire. This specimen was preserved by Mr. Drax, and is now in the possession of J. G. Newton, Esq., of Millaton Bridestow, as recorded in the 'Naturalist' for 1852, page 33.

I had long wished to have an opportunity of examining the body of a male Bustard to inspect the gular pouch described by Daines Barrington, in his 'Miscellanies,' 1781, and by Edwards in his 'Gleanings in Natural History,' 1811, and from thence copied by Bewick and myself, but it was not till lately that an opportunity offered. About four years ago the Zoological Society obtained by purchase six or seven young Bustards from Germany. One of these birds, a male, died within a year: the body was examined by Mr. Mitchell and myself, but no gular pouch was found. This we then attributed to the youth of the bird. During the past summer of 1852 one of the males of these birds was frequently observed courting a female. His appearance at such a time was singular: the wings are lowered to the ground, and while covering the sides, the most anterior parts of both wings are brought round in front, so that the bird appears to be surrounded by a circle of his largest wing-feathers: the head and neck are passed backward, and so depressed that the occipital portion of the head touches his back, and in this attitude he struts round his favourite. No inflation of the neck was observed. The females are timid and rather shy. Constant exposure to numerous visitors at the Gardens, with the want of sufficient space for seclusion, probably interfered, as no eggs were produced.

In the month of December last this male bustard, believed to be four years old, unfortunately died, and Mr. Mitchell very kindly allowed me to examine this adult bird.

To give an indication of what I expected to find, I may first quote the words in Edwards's 'Gleanings':—

"A remarkable anatomical peculiarity in the male of the Great Bustard, first discovered by Dr. James Douglas of the College of Physicians in London.

"It is a pouch or bag to hold fresh water, which supplies the bird in dry places when distant from waters: the entrance into it is between the under side of the tongue and the lower mandible of the bill. I poured into this bag, before the head was taken off, full seven wine pints, before it ran over. This bag is wanting in the hen."

My examination of the mature male Bustard sent to me from the Zoological Society's Gardens was confined to the neck only. I very carefully divided the skin, in a straight line from the union of the two branches of the lower mandible to the angle of the furcular bone or merrythought. On separating the edge of this skin on each side to the right and left, a thin delicate transparent membrane was seen covering, and firmly attached to, the anterior surface of the trachea or windpipe, which lies close to the inner surface of the common skin. Separating the skin still wider, there was on each side of the trachea an elongated narrow column of membrane investing and attached to the blood-vessels and ordinary glands of the neck, and extended downwards was attached to the lateral branch of the furcula on its own side. The œsophagus inclines to the right side of the neck in its passage downward. There was no opening under the tongue, and I failed in various attempts to distend any part of the membranes below, either by fluid or by air.

I was disappointed, and began to doubt the accuracy of my own investigation, but on turning to the volume containing a translation of the anatomical descriptions of the many animals dissected by the Royal Academy of Sciences at Paris, published here by an order of the Council of the Royal Society of London, 1702, I found that although the dissections of six Great Bustards, *and all of them males*, were therein detailed, beginning at page 197, there was no mention of a gular pouch, and the following extracts are in accordance with the observations on the soft parts already described:—"The rings of the *Aspera arteria* (windpipe) were entire. In some of the subjects there was on each side a caruncle or red gland, immediately fastened to the *Aspera arteria* and to the carotids. In the palate and lower part of the beak there was under the membrane which covers these parts, several glandular bodies which did open into the cavity of the mouth by several very visible tubes."

Cuvier, in his 'Leçons d'Anatomie Comparée,' 1799, dwells at some length on the blood-vessels, glands and cellular tissue of the neck in birds, but he does not refer to any peculiarity in the neck of the Great Bustard.

Unwilling, however, to offer my statement to the notice of the Linnean Society without consulting the best living authority in this country, namely Professor Owen, I mentioned the subject to him, and had the satisfaction to find that Mr. Owen agreed with me entirely—that there is in the Great Bustard neither an orifice under the tongue, nor a gular pouch; and he had the kindness to send me a written note in confirmation. "The following was the result of my dissection of a full-grown Bustard, with the view of obtaining a preparation of the alleged gular pouch for the Physiological Series:—No. 772 Q. The head of a Bustard, *Otis tarda*, with the mouth and fauces exposed, showing the glandular orifices between the rami of the lower jaw, the tongue, glottis, internal nostril and Eustachian orifice. There is no trace of a gular pouch." The preparation has this description in the Museum Gallery Catalogue.

I am therefore disposed to consider that Dr. Douglas was mistaken as to the species of bird examined; and that the summer seasonal enlargement of the glands and cellular structure in the neck of the Great Bustard, accompanied as it is by the assumption of certain elongated feathers called the beard, and a stripe of naked blue skin on each side of the neck, is analogous to the excess of colour observed on the naked parts of the head and neck in our Turkey cock in spring, and to the increase in the size of the glands of the neck seen in the males of Deer during their rutting time.